

REMARKS

These remarks are submitted in reply to the Office Action dated 03 January, 2006. Applicant respectfully requests reconsideration and further examination of the patent application under 37 C.F.R. § 1.111.

Upon entry of the foregoing Amendment, claims 1 – 5, 11, 14 – 19, 25, 28 – 35, 41 and 45 are pending in the application. Originally incorrectly numbered claims 40 – 46 were previously renumbered 39 – 45 (although newly numbered claims 39, 40, 42, 43 and 44 have been cancelled). Based on the remarks herein, Applicant respectfully requests that the Examiner reconsider and withdraw all outstanding rejections.

Remarks regarding §103 rejections

Claims 1 - 5, 11, 15-19, 25, 31-35 were rejected under 35US.C. 103(a) as being unpatentable over Hagn (US 20020090974A1) in view of Partridge et al (U.S. Patent No. 6,535,076B2).

In assessing whether subject matter would have been non-obvious under § 103, the guidance of the Supreme Court in *Graham v. John Deere Co* is considered. The Patent Office determines “the scope and content of the prior art,” ascertains “the differences between the prior art and the claims at issue,” and resolves “the level of ordinary skill in the pertinent art.” *Dann v. Johnston*, 425 U.S. 219, 226 (1976) (quoting *Graham*, 383 U.S. at 17). Against this background, the Patent Office determines whether the subject matter would have been obvious to a person of ordinary skill in the art at the time of the asserted invention. *Graham*, 383 U.S. at 17. In making this determination, the Patent Office can assess evidence related to secondary indicia of non-obviousness like “commercial success, long felt but unresolved needs, failure of others, etc.” *Id.*, 383 at 17-18.

Most inventions arise from a combination of old elements and each element may often be found in the prior art. *Id.* at 1357. However, mere identification in the prior art of each element is insufficient to defeat the patentability of the combined subject matter as a whole. *Id.* at 1355, 1357. Rather, to establish a *prima facie* case of obviousness based on a combination of elements disclosed in the prior art, the Patent Office must articulate the basis on which it concludes that it would have

been obvious to make the claimed invention. Id. In practice, this requires that the Patent Office “explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious.” Id. at 1357-59. The 01-03-2006 office action stated that the motivation was to provide sub-nanosecond response times and very low current under switching conditions. However, Applicant submits that although tunable dielectric material inherently does have sub-nano second response times and very low current under switching conditions, this would not provide the motivation to combine the references as other material would likely be more appropriate if that were the primary concerns of the combination. To the contrary, as the present invention provides:

FIG. 2 shows the same application generally as 200, but with tunable filters 205, 215, 245 and 255. The whole module 202 represents the LTCC package. A single tunable bandpass filter 205 would be used to cover both DCS and PCS bands in the receive path 210. The same at low frequencies, i.e., a single bandpass filter would tune 800 and 900 MHz frequency bands 245 in the receive path 250, and of course 850 MHz. Also, low pass filters 215 and 255 provide for single filter use for the transmit side 220 for the DC/PCS frequency and transmit side 260 for GSM 800 and GSM 900. The second row of switches 225 and 240 in this case can be 2-way with the associated simplicity, versus a 3-way switch needed in FIG. 1 at 130 and 150.

Thus, as provided above, the present invention incorporates a tunable band pass filter associated with a second RF switch and utilizes voltage tunable dielectric capacitors to enable tuning. This provides a decreased parts count as a single tunable bandpass filter 205 would be used to cover both DCS and PCS bands in the receive path 210, thereby enabling a far less expensive and more efficient device. Again, while a fast response and low voltage are benefits of tunable dielectric material, the principal reason for using these varactors is to enable tunability for decreased component count in RF front ends; if the motivation were to merely have low current under switching conditions other material would likely work better, thereby teaching away from using the present varactors.

The “motivation-suggestion-teaching” requirement protects against the entry of hindsight into the obviousness analysis, a problem which § 103 was meant to confront. See 35 U.S.C. § 103 (stating that obviousness must be assessed “at the time the invention was made”); *Dembiczak*, 175 F.3d at 998 (“[I]t is this phrase that guards against entry into the tempting but forbidden zone of hindsight.”).

Based on the above and lack of proper motivation to combine the cited art, Applicant submits the motivation-suggestion-teaching requirements have not been met.

In addition to the motivation-suggestion-teaching test, a related test—the “analogous art” test—has long been part of the primary Graham analysis articulated by the Supreme Court. See *Dann*, 425 U.S. at 227-29; *Graham*, 383 U.S. at 35. The analogous-art test requires that the Patent Office show that a reference is either in the field of the applicant’s endeavor or is reasonably pertinent to the problem with which the inventor was concerned in order to rely on that reference as a basis for rejection. *In re Oetiker*, 977 F.2d 1443, 1447 (Fed. Cir. 1992). References are selected as being reasonably pertinent to the problem based on the judgment of a person having ordinary skill in the art. *Id.* (“[I]t is necessary to consider ‘the reality of the circumstances,’—in other words, common sense—in deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor.” (quoting *In re Wood*, 599 F.2d 1032, 1036 (C.C.P.A. 1979))). Courts have explained that this test begins the inquiry into whether a skilled artisan would have been motivated to combine references by defining the prior art relevant for the obviousness determination, and that it is meant to defend against hindsight. See *id.*; *In re Clay*, 966 F.2d 656, 659-60 (Fed. Cir. 1992). In the present cited art, Hagn is in similar art as the present invention and provides a front-end circuit for a communication terminal device that is designed for a multi-band and/or multi-mode operation. Various embodiments are provided that are suitable for mobile radiotelephone devices of the third generation and, in particular, for transmission systems according to the UMTS standard upon involvement of a multi-band GSM system. However, Partridge provides a circuit for providing a control voltage for tunable dielectric devices, the circuit comprising an input for receiving a voltage command signal, a charging circuit for establishing a desired voltage level on a first capacitor in response to the voltage command signal, and a switch for switching voltage on the first capacitor to a tunable dielectric device to control a dielectric constant of tunable dielectric material in the tunable dielectric device. Since dielectric material has heretofore not been used in wireless front ends prior to the present invention, Applicant submits that it is with the benefit of hindsight that it would seem obvious to now incorporate varactors into RF front ends to reduce component count. Indeed, Partridge further teaches away from use in the present invention as it states on column 7, line 10, “The disclosed driver circuit is useful in a wide range of applications

involving tunable dielectric materials”. As Hagn is not an application involving tunable dielectric material, by implication, Partidge would not be usable in Hagn.

In *In re Oetiker*, the Court of Appeals for the Federal Circuit held that “the combination of elements from non-analogous sources, in a manner that reconstructs the applicant’s invention only with the benefit of hindsight, is insufficient to present a prima facie case of obviousness.” 977 F.2d at 1447. Applicant submits the present cited art is non-analogous in so far as Hagn deals with a combined front-end circuit for wireless transmission systems and Partridge is related to a switched charge voltage driver and method for applying voltage to tunable dielectric devices. This may seem as analogous art with the benefit of hindsight since Applicant has combined the two arts; however, prior to the Applicant’s invention, these technologies had not been combined.

Again, rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. See *Lee*, 277 F.3d at 1343-46; *Rouffett*, 149 F.3d at 1355-59. In considering motivation in the obviousness analysis, the problem examined is not the specific problem solved by the invention but the general problem that confronted the inventor before the invention was made. See, e.g., *Cross Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1323 (Fed. Cir. 2005) (“One of ordinary skill in the art need not see the identical problem addressed in a prior art reference to be motivated to apply its teachings.”). In the present invention, the general problem was the need to combine a plurality of frequency transmissions and receptions in a compact, efficient and cost effect front end. This was a problem not suggested in either of the cited arts.

The “motivation-suggestion-teaching” test asks not merely what the references disclose, but whether a person of ordinary skill in the art, possessed with the understandings and knowledge reflected in the prior art, and motivated by the general problem facing the inventor, would have been led to make the combination recited in the claims. See *Cross Med. Prods.*, 424 F.3d at 1321-24. Applicant submits that prior to the present invention, one skilled in the RF front end art would not be skilled in the voltage tunable dielectric art and therefore would not consider combining this non-analogous art.

Finally, Applicant reiterates from the previous office action response that the benefits of using the voltage tunable dielectric capacitors during the research and development for the present

invention were surprisingly good and the performance was better than anticipated and would not have been predicted.

Further, numerous implementation problems were overcome in using voltage tunable dielectric capacitors of the present invention and there was some prejudice to not use voltage tunable dielectric capacitors at the time, as it was unsure of the radiation propagation effects that using such material might have. Further, there were technical difficulties to be overcome, such as the aforementioned anticipated negative propagation effects and also the power levels required for tuning had to be considered. Applicant also submits that Applicant and assignee for the present invention have intimate knowledge of the great amount of trial and error and millions of dollars of research and development that was required in order to make the present invention.

Based on the foregoing, Applicant submits independent claims 1, 20 and 36 are in condition for allowance and as the limitations in those independent claims are included in the remaining dependent claims, Applicant submits those claims are in condition for allowance as well.

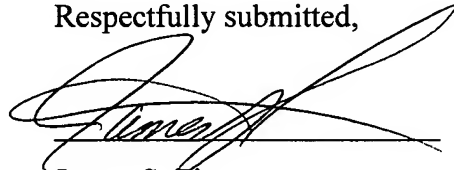
Conclusion

From the foregoing, Applicants respectfully submit that all of the stated grounds of rejections have been properly traversed, accommodated, or rendered moot. Accordingly, Applicants respectfully request that the application is in condition for allowance and respectfully request such action.

If the Examiner believes, for any reasons, that personal communication will expedite prosecution of this application the Examiner is invited to telephone the undersigned at the following number: 202-607-4607.

The USPTO is authorized to charge Deposit Account No. 502697 any fees associated with this response.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "James S. Finn", written over a horizontal line.

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